CLAIMS

WHAT IS CLAIMED IS:

1. A sensor for detecting stress within a material of the type comprising first and second capacitor plates spaced apart by a variably dimensioned air gap, the improvement comprising:

a connector block situated between the capacitor plates and holding the capacitor plates together in a predetermined mutual orientation, the connector block including a plurality of rod members protruding from opposite connector block sides and extending into a respective capacitor plate to attach peripheral portions of each capacitor plate to the connector block.

2. A sensor according to claim 1, wherein further comprising a spacer member situated between the capacitor plates, the spacer member including opposite spacer member sides held against a respective inward facing surface of the capacitor plates along peripheral portions of the air gap whereby the air gap is calibrated along the peripheral portions to the thickness of the spacer member.

3. A sensor according to claim 2, wherein the spacer member is composed of MYLAR.

4. A sensor according to claim 1, wherein the connector block rod members extend axially through the capacitor plates to an outer plate side and include terminal rod portions formed at an angle over the capacitor plate along the capacitor plate outer side.

5. A sensor according to claim 4, wherein each respective terminal rod portion of a rod member extends at approximately a ninety degree angle to a longitudinal axis of the rod member.

6. A sensor according to claim 5, wherein the connector block rod members are composed of a heat deformable plastics material.

7. A sensor according to claim 1, wherein the connector block is unitarily formed and composed of a heat deformable plastics material.

8. A sensor according to claim 1, wherein the connector block is disposed between peripheral portions of the capacitor plates and the connector block rods extend into the peripheral capacitor plate portions to attach the peripheral plate portions to the connector block.

9. A sensor according to claim 8, wherein the capacitor plates are substantially circular and the connector block comprises a unitarily formed circular ring disposed between the peripheral portions of the capacitor plates.

10. A sensor according to claim 9, wherein further comprising a spacer ring member situated between the capacitor plates concentrically inward of the connector block, the spacer member including opposite spacer member sides held against a respective inward facing surface of the capacitor plates along peripheral portions of the air gap whereby the air gap is calibrated along the peripheral portions to the thickness of the spacer member.

11. A sensor according to claim 10, wherein the connector block rod members extend axially through the capacitor plates to an outer plate side and include terminal rod portions formed at an angle over the capacitor plate along the capacitor plate outer side.

12. A sensor according to claim 11, wherein the connector block is composed of a heat deformable thermoplastic material.

13. A tire and sensor assembly for detecting stress within a tire rubber material, comprising:

a tire having a target region at least partially composed of rubber;

a sensor embedded within the target region and comprising: first and second capacitor plates spaced apart by a variably dimensioned air gap; a connector block situated between the capacitor plates and holding the capacitor plates together in a

predetermined mutual orientation, the connector block including a plurality of rod members protruding from opposite connector block sides and extending into a respective capacitor plate to attach peripheral portions of each capacitor plate to the connector block; and

the connector block rod members extend axially through the capacitor plates to an outer plate side and include terminal rod portions formed to extend over the capacitor plate along the capacitor plate outer side.

14. An assembly as set forth in claim 13, wherein the terminal rod portion of a rod member extends at approximately a ninety-degree angle to a longitudinal axis of the rod member.

15. An assembly as set forth in claim 14, wherein the connector block rod members are composed of a heat deformable plastics material.

16. An assembly as set forth in claim 14, further comprising a spacer member situated between the capacitor plates, the spacer member including opposite spacer member sides held against an inward facing surface of each capacitor plate along peripheral portions of the air gap whereby the air gap is calibrated along the peripheral portions to the thickness of the spacer member.

17. A method of assembly for a sensor for detecting stress within a material of the sensor type comprising first and second capacitor plates spaced apart by a variably dimensioned air gap, the method comprising the steps:

a. forming a plurality of through-holes through peripheral portions of each capacitor plate;

b. positioning a connector block between the capacitor plates, the connector block including a plurality of rod members protruding from opposite connector block sides;

c. extending the rod members through respective through-holes in the capacitor plates to attach the peripheral portions of each capacitor plate to the connector block; and

d. forming terminal rod portions of the rod members over an outer side of a respective capacitor plate.

18. A method of assembly as set forth in claim 17, further comprising the steps:
forming the connector block of heat deformable plastics material;
extending the terminal portions of the connector rod members a distance beyond the outer side of a respective capacitor plate; and
applying heat to the terminal portions of the connector rod members while deforming the terminal portions over the outer side of the respective capacitor plate.

19. A method of assembly as set forth in claim 17, further comprising the steps:
positioning a spacer member between the capacitor plates with opposite spacer member sides against an inward facing surface of the capacitor plates along peripheral portions of the air gap; and
calibrating the air gap along the peripheral portions to the thickness of the spacer member.

20. A method of assembly as set forth in claim 17, further comprising the step of forming the external peripheral shapes of the connector block and the capacitor plates to be complementary in external geometric configuration and dimension.